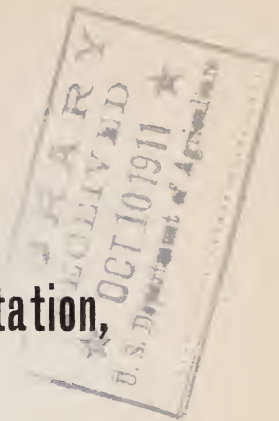


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PRESS BULLETIN NO. 31.

Brief Instructions for Farm Butter Makers.

BY

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The Territory of Hawaii consumes annually about \$150,000 worth of imported butter and oleomargarine. The prices paid range from forty cents to seventy-five cents per pound. Besides this, there is an enormous amount of "Island" butter sold. House-keepers prefer the island product if it is good, but the supply of *well made* butter is not equal to the demand.

Island butter does not keep well. It is the purpose of this bulletin to give simple rules for producing good flavored butter that will keep well.

FLAVORS ABSORBED FROM OUTSIDE.

Milk and butter are much influenced by odors in the air. If the milking is done in a bad-smelling stable, the milk is almost sure to absorb it. For this reason the place where the milking is done

should be kept clean. The milk should be removed from the stable as soon as possible after milking into a sweet, clean place.

FLAVORS PRODUCED WITHIN THE MILK ITSELF.

If milk is kept free from bacteria it will never sour. There are few bacteria in milk as it comes from the cow, but they multiply very rapidly. Dust dropping into the milk from the air carries multitudes of them. When the sun shines through a crack we see myriads of little specks of dust floating in the air. These little air-ships are in dry air at all times, and are constantly rising and falling. Each one carries perhaps a hundred germs. Many of these are good germs, but most of them will give trouble to the butter-maker. Cow hairs are loaded with undesirable germs. When hairs get into the milk, they introduce into the milk countless germs to make trouble for the careful butter-maker. So it is with flies, poorly washed milk buckets and utensils, and dirt of any kind. Many of the bad flavors and other troubles of the butter-makers are caused by bad germs. The careful butter-maker must carefully guard his milk and cream against undesirable germs. Nevertheless in spite of all that can be done, cream will have undesirable germs in it. It is customary therefore, at creameries to pasteurize the cream as soon as it is separated. This can be done by heating the cream to 150° F. or 160° F. and then cooling it down as quickly as possible to the souring temperature, which is usually about 60° to 70° F. Pasteurizing kills nearly all germs.

THE RIPENING OF CREAM BY DESIRABLE GERMS.

Now comes the time to take into account the desirable germs. Scientists can show us under the microscope, minute organisms, of a certain species which produce the most desirable flavors in butter.

In large modern creameries, these germs are carefully reared and introduced into the pasteurized cream. This process is too elaborate for the farm butter-maker, but similar methods are used by many farm butter-makers. It is a common practice of good butter-makers to add to the sweet cream 24 or 48 hours before churning, some sour cream or milk or some buttermilk.

This "starter"*¹ as it is called, must be of a pleasant acid taste, or it will do more harm than good. About one part of starter to ten parts of cream should be used, if the cream is to be soured



The Most Sanitary Style of Milk Bucket

*¹ There are two different classes of starters—the NATURAL, including sour milk or cream, buttermilk, or whey,—and the COMMERCIAL.

The natural ones usually contain several species of bacteria (some good, some bad)—while the commercial starters are divided into "pure cultures" made up from a single individual of a single species, and "mixed cultures" containing different species, but only those whose action is known to be beneficial.

A more varied product is made from the use of the natural starters, while with the commercial as long as they are kept pure—a very uniform article of butter can be secured since these contain only those germs which give to the butter the proper flavor and keeping quality.

The product from use of Commercial starters probably excels that from use of natural ones as much as the latter excels that made in the old-fashioned haphazard way.

Ref.—Wis. Bul. No. 246,—Iowa Bul. No. 103,—Wis. Bul. No. 181.

in 48 hours. When a longer time is to be allowed, less starter will be needed. It is a good plan to get some butter-milk from a neighbor who makes good butter, if a good starter cannot be secured at home. This method would be farther improved if the cream were pasteurized before the starter were added. The only instrument needed for this is a common floating dairy thermometer, which can be bought for about twenty-five cents from any dairy supply house. Simply put the cream as soon as separated or skimmed, upon the stove and heat it up to 150° F. or 160° F. Then cool it to the temperature at which it is to be kept until sour, and add the starter. Of course where the cream from three or four separations is to be mixed together, the starter need be added only once,[†] but each lot should be pasteurized. By pasteurizing the cream and using a starter, the butter will be found to keep better than if the cream is allowed to sour by chance. The most common complaint against island butter is that it does not keep. The above method will remedy this evil. As a rule it is best to keep the cream at such a temperature that it will be ready for churning in about 48 hours, but where few cows are kept a shorter time is permissible.

SHALLOW PANS.

Cream or milk should not be kept in shallow pans. These pans expose a great amount of milk to the air and this permits it to absorb bad odors, and also gives great opportunity for large numbers of germs to enter the milk. It also allows the top of the cream to dry out and become tough. This tough cream causes white specks and a mottled appearance in the butter.

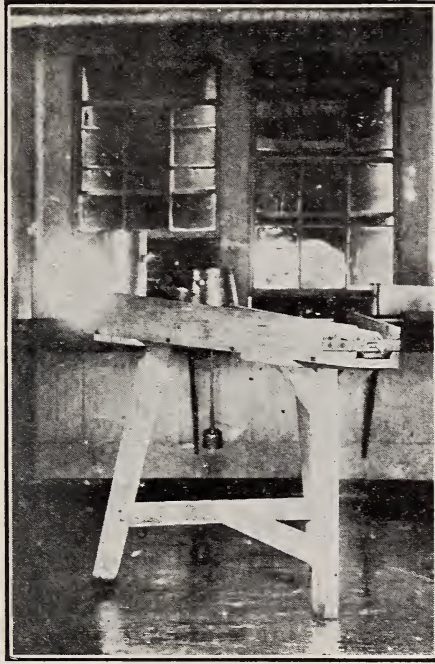
DEEP CANS.

The cream should be set in deep tin cans, as shown in the illustration. These are easy to clean, easy to handle and expose very little cream to the air. They should be lightly covered, with clean paper, cheese-cloth or a loose fitting cover.

[†] At the Hilo Boarding School, it was found to be better to add the starter to the **second** of four lots of cream.

WHEN TO CHURN.

Cream is ready to churn when it has a pleasant acid taste and smell, and when it pours like molasses. It requires skill and practice to determine when cream is at its very best state to churn. Even the most skillful and experienced person will make



A Handy Butter Worker for the Farm

mistakes. On this account it is advisable to use an acid tester to determine the condition of the cream. The outfit necessary for this can be purchased from dairy supply houses for about \$5.00, and the use of one of these outfits will do much towards producing a uniform product. Sufficient directions come with the outfit to enable any inexperienced person of intelligence to use it with good results.

CHURNING.

The barrel churn is the best churn for farm use. When the amount of cream to be handled becomes too bulky for a large

sized barrel churn, it will pay to get a combined churn and butter worker, and the latter will pay even with fifteen cows.

TEMPERATURE.

The cream to be churned should be at a temperature of about 55° Fahr. If the buttermaker has a dairy thermometer and uses it, he will soon determine the proper temperature at which he should churn. If the churning temperature is too warm the butter will be soft, and if worked in that condition will become greasy, and it will be hard to get the wash water out. If the cream is too cold the churning may be retarded.

PREPARING THE CHURN.

To prepare the churn, first pour into it a few quarts of boiling water, fasten the lid on loosely so as to permit the steam to escape. Revolve the churn a few times, and then empty out the water. The pressure of the steam will fill all the pores of the churn with water, and the cream will not stick to the churn. The churn must then be cooled off by putting some clean cold water into it. Replace the lid and revolve the churn rapidly three or four times. Empty out the water and the churn is ready to use.

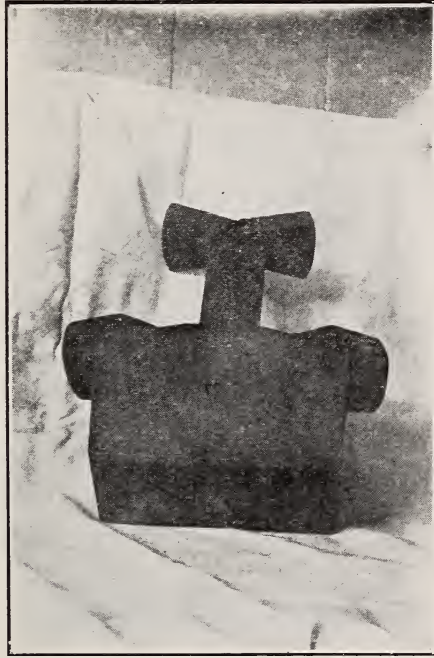
The cream should be strained into the churn through a coarse wire strainer. This will remove lumps of hard curdled cream which cause specks in the butter. If butter color is to be used it should be added at this time, before churning commences.

The churn should be revolved just as rapidly as can be done without having the cream revolve with the churn. It is the splashing which knocks the little globules of fat together so that they are united, consequently the more concussions there are to take place inside the churn per minute, the quicker the butter comes. The wooden plug in the churn should be removed at frequent intervals during the first few minutes of churning so as to permit the gas to escape.

Churning should cease when the butter is gathered in little lumps the size of rice kernels. The buttermilk may then be drawn off through the hole in the bottom of the churn, using the coarse strainer, before mentioned, to catch stray lumps of butter. Let the buttermilk draw off well.

WASHING.

Pour into the churn about as much *very* cold water as there was cream to begin with. Close the churn, and revolve it very fast three or four times. Remove the stopper and let the water drain off.



A Cheap Efficient Butter Printer

SALTING.

Add to the butter about an ounce of salt to the pound of butter. It may be necessary to weigh the butter before salting, but *always* weigh and salt. Remember that salt is cheap, and that it is poor policy to put in less salt than your customers want. The salt should be very fine and should be sifted evenly over the butter, either in the churn, or on the worker.

WORKING.

Butter should be worked till the salt is evenly mixed all through the butter, and till the water does not show in large drops. Remember that customers have no objection to a small amount of

water in the butter as long as it does not show. If butter is soft when worked, the water will appear in large drops. Never give a sliding motion to the worker or ladle. A sliding slipping motion tends to give the butter a greasy appearance, which is objectionable. The same thing will happen if the butter is too warm. A wise maker will put his butter away till it is cold, rather than work it soft.

PRINTING.

For the island market butter should be put into pound prints, and be neatly wrapped in parchment paper. Printers can be bought from dairy supply houses similar to the illustration, which are filled by pressing the printer into the mass of butter, and are emptied by merely pressing the plunger. The butter should be put up in attractive packages. It is the outside that sells the article. Rectangular prints are preferable to round.

WASHING DAIRY UTENSILS.

Buckets, cans, etc., should first be washed in warm water and then in water boiling hot. They should be so hot that no wiping is needed to dry them. If they are washed in hot water first, the milk will be cooked on, and they will be hard to clean. Boiling water kills all the germs.

The churn should be wrinsed out with warm water after using, and then with boiling water, after which it should be allowed to drain and air out.

Sunshine is a great germ destroyer. Let the dairy utensils have plenty of sunshine.

BUILDINGS, ETC.

The regulations of the Board of Health about buildings are so explicit that it would be useless to dwell upon that subject in this bulletin.

SHORT RULES.

Germs are the best friends and the worst foes of the butter-maker.

It is one kind of germs that gives good flavor to sour cream.

It is other kinds of germs that make bad flavors in butter.

Do not take chances. Kill the bad germs and grow the good germs. Pasteurize and use a starter.

A small speck of dirt, or a single cow's hair may harbor countless germs. See that your milk is clean.

No dairy utensils except the churn should be made of wood.



A Strong Light Can In Which to Ripen Cream. It is Easy to Clean.

galvanized iron or enamelware. Wooden and galvanized iron utensils are too rough and full of cracks to clean well, and granite-ware is good only when new and not chipped. Smooth, heavily tinned buckets and cans with ALL SEAMS SMOOTHLY SOLDERED are the only vessels that can be well cleaned.

Use a good brush for washing bucket and cans. Never use the dish-cloth. Dish-cloths smear germs all over everywhere. Dish-cloths do not clean corners.

Difficulty in churning is usually due to one or more of the following causes:

1. The cream may be too cold, too thin, or too thick.
2. The churn may have too much cream in it.

3. The cream may have been kept for too long a time.
4. A farrow (or stripper) cow's milk may be causing the trouble.
5. The cows may be getting feed which is too dry.
6. The butter-maker may be incompetent, and should consult an expert butter-maker.

